

WHAT IS CLAIMED IS:

1. A scanning ultrasound detection device using two-wave mixing in photorefractive interferometry, in cooperation with a light source, an ultrasound-wave-generating-module and a target wherein said
5 ultrasound-wave-generating-module generates at least an ultrasound signal to cause said target to bring about ultrasound vibrations, comprising:

an interferometer with two-wave mixing in photorefractive crystal for receiving rays of light coming from said light source to generate a signal beam for detecting said ultrasound vibrations of said target and a
10 reference beam having an interference with said signal beam; and

a rotating unit for directing said signal beam to be incident upon different locations of said target to result in a scanning motion.

2. The scanning ultrasound detection device of claim 1, wherein said interferometer with two-wave mixing in photorefractive crystal further
15 comprises a photorefractive crystal, a first convex lens, and a photo detector, and the rays of light coming from said light source are incident on said photorefractive crystal; and said signal beam and said reference beam are formed through said photorefractive crystal.

3. The scanning ultrasound detection device of claim 2, wherein
20 said reference beam passes through said photorefractive crystal, and said signal beam is reflected to said target from said photorefractive crystal and then is reflected back to said photorefractive crystal from the surface of said target.

4. The scanning ultrasound detection device of claim 3, wherein

said signal beam reflected from the surface of said target brings about a Doppler shift related to ultrasound vibrations of said target; said signal beam passes through said photorefractive crystal, and superimposes a reference beam by means of said photorefractive crystal to generate an interference, and then strikes on said photo detector through said first convex lens.

5 5. The scanning ultrasound detection device of claim 2, wherein said interferometer with two-wave mixing in photorefractive crystal further comprises a second convex lens and a third convex lens, and said rotating
10 unit has a rotation axis at which the focal point of said second convex lens and the focal point of said third convex lens are located.

 6. The scanning ultrasound detection device of claim 5, wherein said photorefractive crystal is supported by said rotating unit, and is rotated by said photorefractive crystal so that said signal beam strikes on said target
15 for scanning of the target.

 7. The scanning ultrasound device of claim 6, wherein said rotating unit is rotated in a signal-axial direction.

 8. The scanning ultrasound device of claim 6, wherein said rotating unit is rotated in a biaxial direction.

20 9. The scanning ultrasound detection device of claim 5, wherein said third convex lens for directing said signal beam to be incident perpendicularly on the surface of said target is disposed between said rotation axis and said target; and said second convex lens for altering the direction of said signal beam by means of said photorefractive crystal to

become a parallel beam to be focused on said photo detector through said first convex lens is disposed between said rotation axis and said first convex lens.

10. The scanning ultrasound detection device of claim 9, wherein
5 said photo detector is located at the focal point of said first convex lens and is opposed to the side on which said second convex lens is located.

11. The scanning ultrasound detection device of claim 1, wherein said light source is a laser.